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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,725	12/11/2000	Takatoshi Kato	50395-076	2352

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EXAMINER	
SONG, SARAH U	

ART UNIT	PAPER NUMBER
2874	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/732,725	Applicant(s) KATO ET AL.	
	Examiner Sarah Song	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12,14 and 15* is/are allowed.

6)☒ Claim(s) *1-4,7-11 and 13* is/are rejected.

7)☒ Claim(s) *5 and 6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's communication filed on March 9, 2004 has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims, are persuasive and the rejections based upon prior art made of record in the previous Office Action are withdrawn. Claims 1-7 and 11 have been amended. New claims 12-15 have been added. Claims 1-15 are pending. The abstract as amended is approved. The objection to the drawings is withdrawn.

Claim Objections

2. Claim 2 is objected to because of the following informalities: Examiner suggests insertion of —or less.—in line 3 after "km^{-1}". Appropriate correction is required.

3. Claim 3 is objected to because of the following informalities: Examiner suggests changing "if" in line 2 to —is—. Appropriate correction is required.

4. Claim 11 is objected to because of the following informalities: in line 4, Examiner suggests deleting "the" before –light signals—to eliminate a lack of antecedent basis for the light signals having the specificied wavelengths. Appropriate correction is required.

5. Claim 13 is objected to because of the following informalities: in line 2, change "urn" to —μm—. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 7/1, 8/7/1 and 9/7/1 are rejected under 35 U.S.C. 102(b) as being anticipated by Bhagavatula (U.S. Patent 4,715,679 newly cited). Bhagavatula discloses an optical fiber whose chromatic dispersion is –12 ps/nm/km or more but –3 ps/nm/km or less at all of the wavelengths in a range of 1300 nm to 1600nm (see Figure 5, curve 56) wherein the cutoff wavelength is not more than 1330 (see column 6, lines 4-8).

8. Regarding claim 7/1, note central core region denoted by graph region 19a, second core region denoted by graph region 22, third core region denoted by graph region 19b, and a clad region denoted by graph region 20 (Figure 2).

9. Regarding claim 8/7/1, the clad region has an inner clad region 16 (corresponding graph region 20) having a refractive index smaller than said third refractive index region and an outer clad region (18, region immediately to the right of region 20 in Figure 2) having a refractive index greater than that of the inner clad region.

10. Regarding claim 9/7/1, Bhagavatula discloses a relative refractive index difference of the central core (Δ) to be 0.5% and thus within the claimed range (see column 6, lines 4-6).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 2, 3, 4, 13, 7/13, 8/7/13 and 9/7/13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula. Bhagavatula discloses a dispersion between about –10 ps/nm/km and –3 ps/nm/km in a wavelength range of 1300 nm to 1600 nm as discussed above,

but does not expressly disclose a fiber wherein said chromatic dispersion is between –12 ps/nm/km and –4 ps/nm/km for all wavelengths in the range of 1300 nm to 1600 nm. However, since Bhagavatula discloses a dispersion between about –10 ps/nm/km and –3 ps/nm/km in a wavelength range of 1300 nm to 1600 nm, which is very near the claimed range and also overlaps the claimed range, the claimed range would have been obvious to one of ordinary skill in the art. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

13. Regarding claim 3, Bhagavatula discloses a dispersion between about –10 ps/nm/km and –2 ps/nm/km in a wavelength range of 1250 nm to 1600 nm (see Figure 5, curve 56), but does not expressly disclose a fiber wherein said chromatic dispersion is between –20 ps/nm/km and –4 ps/nm/km for all wavelengths in the range of 1250 nm to 1650 nm. However, since Bhagavatula discloses a dispersion between about –10 ps/nm/km and –2 ps/nm/km in a wavelength range of 1250 nm to 1600 nm, which is very near the claimed range and also overlaps the claimed range, the claimed range would have been obvious to one of ordinary skill in the art. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Similarly, a prima facie case of obviousness

exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

14. Regarding claim 4, Bhagavatula discloses a dispersion between about –10 ps/nm/km and –2 ps/nm/km in a wavelength range of 1250 nm to 1600 nm (see Figure 5, curve 56), but does not expressly disclose a fiber wherein said chromatic dispersion is between –16 ps/nm/km and –4 ps/nm/km for all wavelengths in the range of 1250 nm to 1650 nm. However, since Bhagavatula discloses a dispersion between about –10 ps/nm/km and –2 ps/nm/km in a wavelength range of 1250 nm to 1600 nm, which is very near the claimed range and also overlaps the claimed range, the claimed range would have been obvious to one of ordinary skill in the art. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

15. Regarding claim 13, Bhagavatula discloses a dispersion between about –10 ps/nm/km and –3 ps/nm/km in a wavelength range of 1300 nm to 1600 nm (see Figure 5, curve 56), but does not expressly disclose a fiber wherein said chromatic dispersion is between –20 ps/nm/km and –7.1 ps/nm/km for all wavelengths in the range of 1250 nm to 1650 nm. However, since Bhagavatula discloses a dispersion between about –10 ps/nm/km and –3 ps/nm/km in a wavelength range of 1300 nm to 1600 nm, which overlaps the claimed range, the claimed range

would have been obvious to one of ordinary skill in the art. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

16. Regarding claims 7/13, 8/7/13 and 9/7/13, note central core region denoted by graph region 19a, second core region denoted by graph region 22, third core region denoted by graph region 19b, and a clad region denoted by graph region 20 (Figure 2). Also, the clad region has an inner clad region 16 (corresponding graph region 20) having a refractive index smaller than said third refractive index region and an outer clad region (18, region immediately to the right of region 20 in Figure 2) having a refractive index greater than that of the inner clad region. Furthermore, Bhagavatula discloses a relative refractive index difference of the central core (Δ) to be 0.5% and thus within the claimed range (see column 6, lines 4-6).

17. **Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula as applied to claim 1 above, and further in view of Chang et al. (U.S. Patent 6,131,415 previously cited).** Bhagavatula discloses the claimed invention except for a transmitter and receiver.

18. Chang et al. discloses transmitters 81-84 and receivers 91-94 for sending out and receiving light signals having wavelengths in the range of 1200-1600.

19. Bhagavatula and Chang et al. are analogous art as pertaining to same field of endeavor, that is optical fiber transmission in the wavelength range of about 1200-1600.

20. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to transmitter and receivers of Chang et al. with Bhagavatula.

21. The motivation for doing so would have been to provide a complete transmission system for WDM communications over a broad wavelength range.

22. As noted above, Bhagavatula discloses a dispersion between about –10 ps/nm/km and –2 ps/nm/km in a wavelength range of 1250 nm to 1600 nm (see Figure 5, curve 56), but does not expressly disclose a fiber wherein said chromatic dispersion is between –20 ps/nm/km and –3 ps/nm/km for all wavelengths in the range of 1250 nm to 1650 nm. However, since Bhagavatula discloses a dispersion between about –10 ps/nm/km and –2 ps/nm/km in a wavelength range of 1250 nm to 1600 nm, which is very near the claimed range and also overlaps the claimed range, the claimed range would have been obvious to one of ordinary skill in the art. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

Allowable Subject Matter

23. Claims 12, 14 and 15 are allowed.

24. Claims 5, 6, 7/12, 8/7/12 and 9/7/12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

25. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not disclose or reasonably suggest, either alone or in combination, the

claimed fiber additionally having an effective area at a wavelength of 1550 nm of 40 μm^2 or more, a loss increase due to OH group of 0.1 dB/km or less, or a bending loss of not more than 2.4 dB at the wavelength of 1550 nm when said fiber is wound 1 turn about a 32 mm diameter mandrel. Both, Cohen et al. (previously relied upon) and Bhagavatula are silent with respect to these features, and the modification to arrive at the claimed invention is not reasonably suggested by the prior art of record.

Response to Arguments

26. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 6,636,677; 6,567,596 and 6,490,397 are cited as relevant art, but do not qualify as prior art.

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

29. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 571-272-2359. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 571-272-1562 or to the technical support staff supervisor at telephone number 571-272-1615.

Sarah Y Song
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John D. Lee
John D. Lee
Primary Examiner